

## *Acacia bartlei* (Fabaceae: Mimosoideae), a new species from near Esperance, Western Australia

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### Abstract

Maslin, B.R. & Reid, J.E. *Acacia bartlei* (Fabaceae: Mimosoideae), a new species from near Esperance, Western Australia. *Nuytsia* 22(2): 51–56. *Acacia bartlei* Maslin & J.E.Reid, a new, rare species of *Acacia* Mill. related to *A. redolens* Maslin, is described. It is restricted to a small area north and north east of Esperance, Western Australia, where it grows in often waterlogged depressions.

### Introduction

The new species described here, *Acacia bartlei* Maslin & J.E.Reid, is referable to *Acacia* Mill. sect. *Plurinerves* (Benth.) Maiden & Betche and is most closely related to *A. redolens* Maslin. It was first recognized as distinct by Maslin and McDonald (2004) who treated it as *Acacia* affin. *redolens* in connection with the *AcaciaSearch* project where it was assessed as being not highly prospective as a woody crop option for cultivation in the agricultural regions of southern Australia. Photographs and a distribution map of the species are presented in Maslin and McDonald (2004, Figure 25 & Map 52). It is relevant to note here that *A. bartlei* is not the same species that appeared in Maslin and McDonald (2004) as ‘*Acacia bartleana* Maslin (ms name)’; this latter taxon is now regarded as a minor variant of *A. microbotrya* Benth. (Maslin in prep.).

### Taxonomy

***Acacia bartlei*** Maslin & J.E.Reid, *sp. nov.*

*Typus*: north-east of Esperance, Western Australia [precise locality withheld for conservation reasons], 27 June 2000, B.R. Maslin 7980 (*holo*: PERTH 05591570, *iso*: AD, CANB, K, MEL, NSW).

*Acacia* affin. *redolens sensu* Maslin & McDonald (2004).

*Acacia* sp. Burdett Road (B.R. Maslin 8218) in Council of Heads of Australasian Herbaria, *Australian Plant Census*, <http://www.chah.gov.au/apc/index.html>; Western Australian Herbarium, in *FloraBase*, <http://florabase.dec.wa.gov.au> [both accessed Nov. 2011].

Erect, ± rounded *shrubs* 1.5–2.5 m tall maturing to *trees* 4–7(–10) m tall, dividing at 0.5–1.8 m above ground level into 2 or 3 sub-straight main stems (9–20 cm dbh), the bushy crowns ± rounded and 2–9 m wide. *Bark* grey, fissured and rough or fibrous on main stems, smooth on upper branches. *Branchlets* red or light brown, terete, the obscure ribs with an overburden of translucent, often transversely segmented, shiny resin towards extremities, glabrous except often minutely and obscurely appressed-hairy within axil of phyllodes and at base of shoots that arise from within the axils. *New shoots* resinous (often vernicose), not viscid. *Phyllodes* patent to ascending or erect, mostly narrowly oblong-elliptic to narrowly oblong-ob lanceolate, a few narrowly elliptic or (when very narrow) linear, narrowed at base, (20–)25–65(–75) mm long, (2–)3–6(–10) mm wide, straight to shallowly recurved, sometimes (especially when very narrow) shallowly incurved or a few shallowly sigmoid, glabrous, mid-green to dark green, not redolent; *longitudinal nerves* (2–)3–8(–9), distant, plane or slightly raised, resinous or not resinous and of uniform prominence or some more pronounced than the rest, secondary anastomosing nerves absent or infrequent; *margins* sometimes resinous; *apex* acute or obtuse, normally uncinuate to sub-uncinate but if straight then mucro clearly excentric; *pulvinus* c. 1 mm long, often appressed-puberulous on adaxial surface. *Gland* situated on upper margin of phyllode at or near distal end of pulvinus, swollen within the lamina. *Inflorescences* racemose, 1(–2) within axil of phyllode, with (1–)2–4(–6) heads per raceme; *raceme axis* (1–)2–8 mm long, somewhat flattened, ebracteate at base, terminated by a vegetative bud which sometimes grows out during anthesis; *peduncles* (2–)3–8 mm long, appressed-puberulous but hairs often obscured by resin; *basal peduncular bract* single, persistent, small (0.5 mm long); *heads* globular or slightly obloid, 6 mm diam. when fresh, 4–5 mm diam. when dry, with c. 20 densely packed flowers, light golden; buds resinous and sometimes mealy. *Bracteoles* c. 0.8 mm long, spatulate, with claws narrowly linear and abruptly expanded into thickened, ± ovate, terminal laminae, slightly shorter and morphologically dissimilar to sepals. *Flowers* 5-merous; *sepals* free, membranous, 2/3–3/4 length of petals, narrowly oblong, narrowed towards base, sometimes very slightly expanded at their non-thickened apices; *petals* c. 1.5 mm long, glabrous. *Pods* linear, 20–65 mm long, 2.5–3.5 mm wide, rounded over seeds and slightly constricted between them, straight to shallowly curved, sometimes irregularly coiled upon dehiscence, thinly coriaceous to thinly crustaceous, brown, glabrous or sometimes with sparse, microscopic, appressed hairs. *Seeds* longitudinal in pods, obloid, slightly compressed, 3.5–4.5 mm long, c. 2 mm wide, dark brown to blackish, ± shiny; pleurogram obscure, opened towards aril; *areole* elongated u-shaped; *funicle* expanded into a conspicuous, folded, yellow-brown or brown (when dry), sub-shiny *aril* that partially sheaths the base of the seed. (Figure 1)

*Characteristic features.* Erect *shrubs* or *trees* 1.5–7(–10) m tall. *Phyllodes* mostly narrowly oblong-elliptic to narrowly oblong-ob lanceolate, (20–)25–65(–75) mm long, (2–)3–6(–10) mm wide, glabrous, mid-green to dark green; *longitudinal nerves* (2–)3–8(–9) and distant, secondary anastomosing nerves absent or infrequent; *apex* acute or sometimes obtuse, excentrically mucronate, normally sub-uncinate to uncinuate. *Racemes* short (mostly 2–8 mm long), (1–)2–4(–6)-headed; *heads* ± globular, small (4–5 mm diam. when dry), c. 20-flowered, resinous in bud. *Flowers* 5-merous; *sepals* free, 2/3–3/4 length of petals, narrowly oblong, narrowed towards base. *Pods* linear, 20–65 mm long, 2.5–3.5 mm wide, thin-textured, glabrous. *Seeds* longitudinal in pods, 3.5–4.5 mm long, c. 2 mm wide; *aril* conspicuous, yellow-brown or brown (when dry), partially sheathing base of seed.

*Selected specimens examined.* WESTERNAUSTRALIA: [localities withheld for conservation reasons] 1973, I.B. Armitage 534 (PERTH); 21 Sep. 1933, W.E. Blackall 3034 (PERTH); 14 Aug. 1985, K. Bradby KLB62 (PERTH); Dec. 1987, D. Collins s.n. (PERTH: phyllodes atypically narrow); 6 Sep. 1984, G. Craig 1579 (CANB, K, PERTH); 19 Dec. 1971, B.R. Maslin 2523 (CANB, K, MEL, NSW, PERTH); 27 June 2000, B.R. Maslin 7979 (PERTH); 31 Aug. 1986, B.R. Maslin 6110 (PERTH and, distributed in 1988 as *A. redolens*, B, CANB, NSW, NY); 29 Sep. 2002, W. O'Sullivan WOS 1894

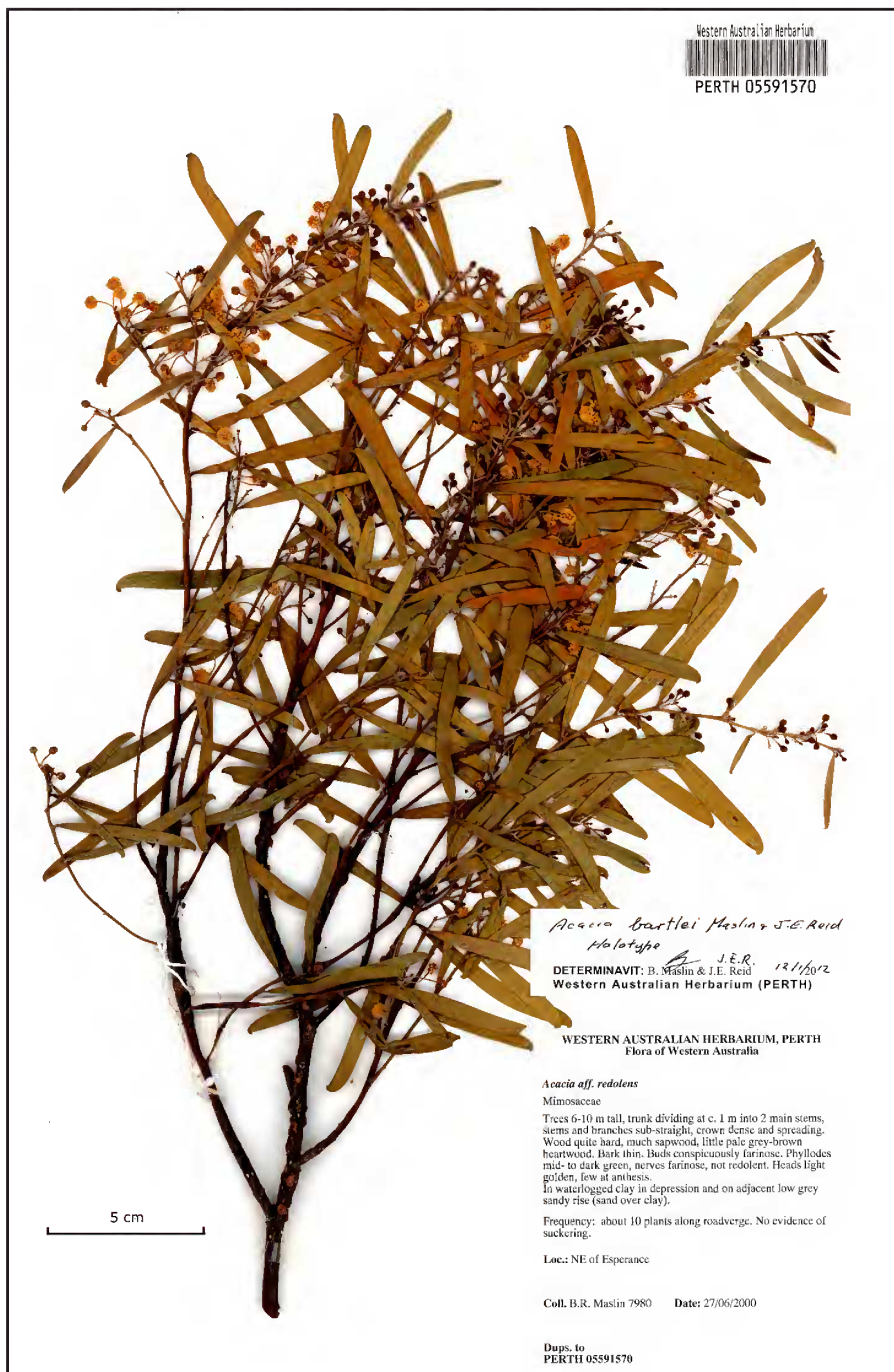


Figure 1. Holotype of *Acacia bartlei* (B.R. Maslin 7980) with precise locality obfuscated, scale bar = 5 cm.

(PERTH) and 19 Mar. 2003, *W. O'Sullivan* WOS 2017 (PERTH); 19 Mar. 2003, *W. O'Sullivan* WOS 2018 (PERTH); 24 Sep. 1998, *C.D. Turley* 8/998 (AD, MEL, PERTH).

*Distribution.* An uncommon species confined to the south coast of Western Australia in the vicinity of Esperance (c. 600 km due SE of Perth). It occurs in a few scattered localities between Salmon Gums and Scaddan, extending eastwards for about 50 km to the vicinity of Kau Rock, Mt Ney, Mt Burdett and Wittenoom Hills. The species is relatively common where it occurs but does not form dense stands. It is found in small, localised populations within a flat or gently undulating landscape, much of which has been extensively cleared for agriculture.

*Habitat.* Grows in often waterlogged depressions in brown or grey, sandy loam or clay-loam or in grey sand over clay adjacent to these depressions; field observations suggest that it may tolerate low to moderate levels of salinity. Commonly found in association with *Eucalyptus occidentalis* (Flat-topped Yate).

*Phenology.* Herbarium specimens show flowering as occurring from late June to mid-October with the main flush between late August and late September. Specimens with mature seed have been collected from early to mid-December. Plants produce reasonable quantities of seed.

*Conservation status.* *Acacia bartlei* is listed as a Priority Three species according to the Department of Environment and Conservation's Conservation Codes for Western Australian Flora by Smith (2012) under its former phrase name *Acacia* sp. Burdett Road (B.R. Maslin 8218).

*Etymology.* It is with much pleasure that we are able to name this new species for John Bartle, Manager, Revegetation Systems Unit of the Department of Environment and Conservation. For more than a decade John has devoted his unbounded energy to research aimed at exploring the native flora's potential to be developed into new large-scale perennial crops that can limit the damage caused by dryland salinity, improve flora conservation and benefit the rural economy (e.g. Bartle *et al.* 2008). He has also in very practical ways strongly supported some of the first author's work involving *Acacia*.

*Suggested common name.* Bartle's wattle.

*Variation.* The phyllodes of *A. bartlei* are somewhat variable in width. Normally they are 3–6 mm wide, but a variant with consistently narrow phyllodes (2 mm wide) occurs in the vicinity of Circle Valley, south of Salmon Gums (e.g. *D. Collins s.n.*), and some specimens possess a few phyllodes which are atypically wide (to 10 mm) (e.g. *B.R. Maslin* 8217).

*Affinities.* *Acacia bartlei* is referable to *Acacia* sect. *Plurinerves* a diverse and probably artificial group of about 212 species (Maslin 2001) characterized by having plurinerved phyllodes and globular heads in racemes or simple within the axil of the phyllodes.

The new species is most closely related to *A. redolens* which has a similar phyllode nervature, inflorescences and carpological features. Both species are found in near-coastal areas of southern Western Australia but are allopatric with *A. bartlei* occurring near Esperance and *A. redolens* occurring 150 km to the west in the Ravensthorpe–Newdgate–Ongerup area. Morphologically the two species are most readily distinguished by their growth form and phyllode characters (Table 1). *Acacia redolens* typically occurs as prostrate, domed shrubs 0.5–1.5(–2) m tall and spreading to 5 m or more across; rare individuals are erect shrubs to 3(–4) m tall, the tallest of which are found in the lower reaches of

**Table 1.** Principal characters distinguishing *Acacia bartlei* from its closest relative, *A. redolens*.

Characters	<i>Acacia redolens</i>	<i>Acacia bartlei</i>
<b>Habit</b>	Normally prostrate, domed shrubs 0.5–1.5 (–2) m tall and spreading to 5 m or more across, rarely erect shrubs 3(–4) m tall	Erect shrubs or trees 1.5–7(–10) m tall, never prostrate
<b>Phyllodes</b>		
Width (mm)	(2–)5–10(–20)	(2–)3–6(–10)
Curvature	Straight to shallowly incurved (never shallowly recurved)	Straight to shallowly recurved, sometimes (when very narrow) shallowly incurved or shallowly sigmoid
Colour	Grey-green to glaucous	Mid-green to dark green
Scent	Vanilla-scented (sometimes not or scarcely evident on dried specimens)	Not vanilla-scented
Apices	Straight, rounded to obtuse with mucro (when present) centric	Uncinate to sub-uncinate or if straight the mucro clearly excentric
<b>Distribution</b>	Ravensthorpe – Newgate west to Pingrup – Ongerup	Near Esperance

the Fitzgerald River about 70 km due south-east of Ravensthorpe. Plants of *A. bartlei* on the other hand are always erect (never domed or prostrate) and mature to trees 4–7(–10) m in height. The phyllodes of *A. redolens* are distinctively vanilla-scented (best assessed in fresh material), are grey-green to glaucous in colour and have rounded to obtuse, straight apices which sometimes possess an insignificant, centric mucro. They are normally 5–10 mm wide but a rare variant with narrow phyllodes (2–3 mm wide) occurs near Pingrup (45 km north of Ongerup). The phyllodes of *A. bartlei* are not vanilla-scented, are mid-green to dark green in colour and their apices are normally uncinatate to sub-uncinate but if straight the small but obvious mucro is clearly excentric. Furthermore, the phyllodes of *A. bartlei* are normally 3–6 mm wide and unlike *A. redolens* are sometimes shallowly recurved.

*Acacia bartlei* was included within Cowan and Maslin's (2001) *Flora of Australia* circumscription of *A. redolens* where it was noted as being characterized by narrow, ± uncinatate phyllodes and arborescent stature, and occurring in the Scaddan–Salmon Gums–Kau Rock area.

*Notes.* Judging from field observations it is suspected that *A. bartlei* is a relatively long-lived species (perhaps more than 20 years) and although its growth rate in nature is unknown, plantation trials showed the best performing plants averaged about 1–1.5 m in height within ten months of planting. It seemingly regenerates from seed and is apparently resistant to locust attack. The wood is relatively hard with a mean basic density of 782 kg/m<sup>3</sup> (sampled from young and adolescent plants). These data are taken from Maslin and McDonald (2004).

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